Course Description

1- Basic Information:

Course Name	Advanced Networking
Course ID	AN
Contact Hours (Registered Sessions)	21
Contact Hours (Synchronized Sessions)	21
Mid Term Exam	2
Exam	2
Registered Sessions Work Load	42
Synchronized Session Work Load	21
Credit Hours	4

2- Pre-Requisites:

Course	ID
Computer Networks	CN

3- Course General Objectives:

The main objective of this course is to provide students with the knowledge and skills that will enable them to contribute to the establishment, operation and maintenance of inter-networks that respond to the needs of customers on the one hand, and satisfy the need of network service providers to control access and provide appropriate service on the other hand.

4- Intended Learning Outcomes (ILO):

Code	Intended Learning Outcomes
ILO1	Describe and analysis the main component of the Internet
ILO2	Compare between the way communications and network control protocols: IPv4, IPv6, ICMP, IGMP, RIP, OSPF, and BGP.
ILO3	Compare between the different methods of providing quality of service and controlling congestion
ILO4	Configure and operate the main components of the Internet, particularly the router
ILO5	Review the traffic log files and evaluate the proposed solutions to congestion problems

5- Course Syllabus (18 hours of total synchronized sessions)

Session #	Topics
1	General introduction to the course and to internetworking
2	Internetworking, exercises, looking inside the Internet
3	The Internet Protocols, IPv4, RIP + Introduction to IOS
4	IPv6, ICMP, exercises n 3, designing a net using Boson
5	Routing: principles of, the router, exercises n 4, configuration of a router NIC, and static routing
6	Methods of routing, exercises n 5, configuration of RIP
7	OSPF, exercises n 6, configuration of OSPF
8	BGP, exercises n 7, configuration of BGP

9	Quality of services, exercises n 8
10	Integrated Services, exercises n 9
11	Differentiated services, exercises n 10
12	TCP and Congestion control, exercises n 11
13	Multicasting, exercises n 12, MBone

6- Assessment Criteria (Related to ILOs)

ISC	Interactive Synchronized Collaboration		Ex	Exams		Rpt	Reports
PF2F	Presentations and Face-to-Face Assessments		PW	Practice Work			

ILO Code	ILO	Intended Results	Assessment Type				
			ISC	PW	Ex	PF2F	Rpt
ILO1	Describe and analysis the main component of the Internet		✓		✓		
ILO2	Compare between the way communications and network control protocols: IPv4, IPv6, ICMP, IGMP, RIP, OSPF, and BGP.		✓		✓		
ILO3	Compare between the different methods of providing quality of service and controlling congestion		✓		✓		
ILO4	Configure and operate the main components of the Internet, particularly the router		✓	✓			✓
ILO5	Review the traffic log files and evaluate the proposed solutions to congestion problems		✓	✓			✓

7- Practice Tools:

Tool Name	Description
Boson NetSim	Boson NetSim is a Cisco networked network software simulator, allows the learner to design a network and make the appropriate settings for the equipment to operate and maintain the network.

8- Main References

- Advanced Networking, prepared by SVU and available via its Learning Management System
- B. A. Forouzan, Data Communications and Networking, 5th Edition, McGraw-Hill, 2012.

9- Additional References

- William Stallings, Data and Computer Communications, 10th Edition, Prentice Hall,. 2013